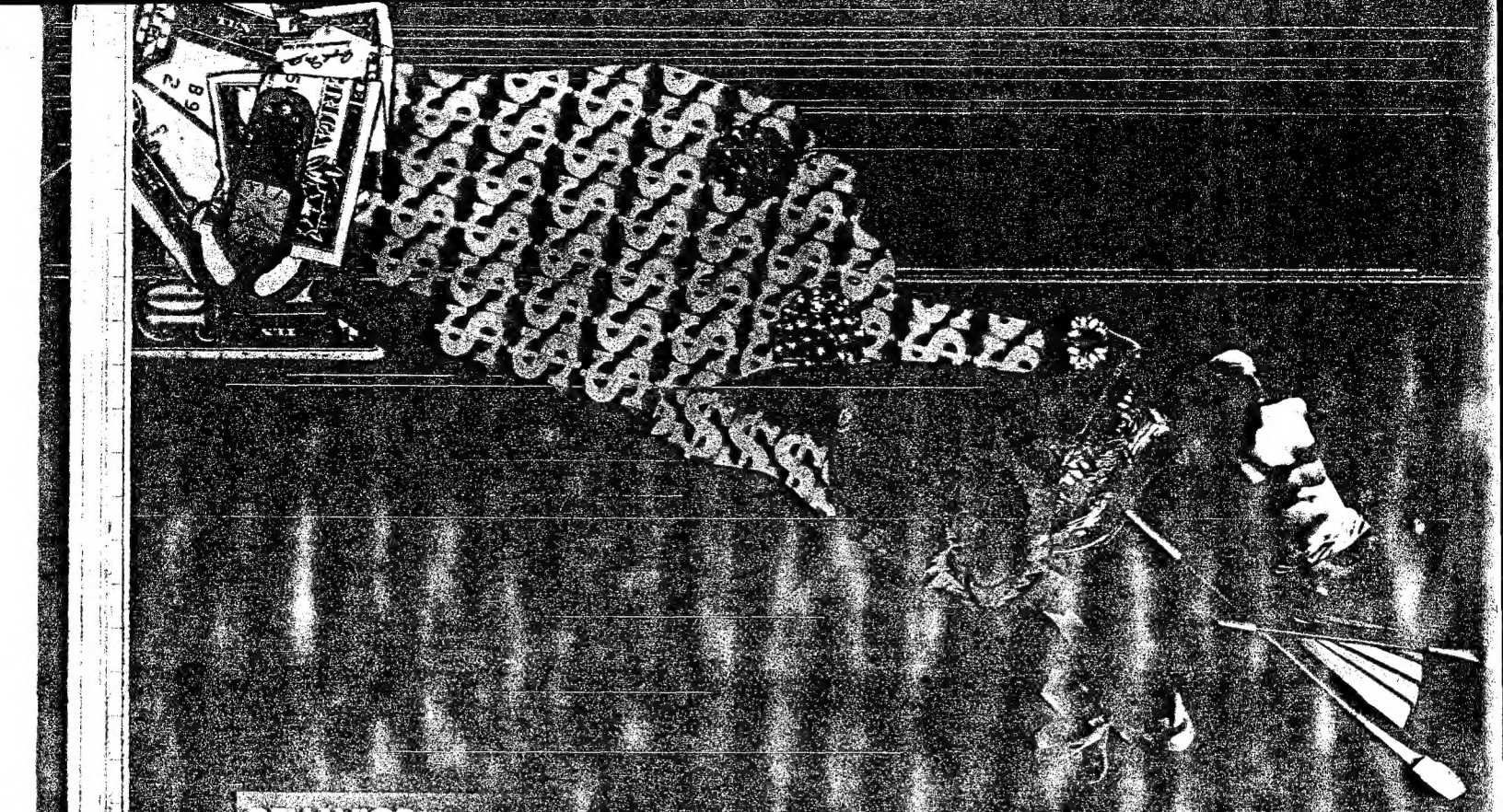


BEHAVIOR

OF TWO MINDS: SELLING THE RIGHT BRAIN

Popularizers are teaching businessmen to tap the supposed source of intuition and creativity. But are they pushing science too far?

BY KEVIN McKEAN

"Frankly, Jones, your education and background are quite average," the personnel officer tells a nervous applicant. "But your brain dominance profile is impressive, strong right hemisphere skills, especially intuition and holistic thinking. That's just the kind of mind we need in this company. I think we can offer you a job."

That speech probably hasn't been made yet. But it soon could be, if the teachings of a new group of management advisers catch on. These consultants, investment counselors and other entrepreneurs have set themselves the task of persuading American business that what they consider to be discrimination against half the human brain—the right half. In the process, they promise, companies can improve working conditions, increase profits and better withstand the economy's ups and downs.

This unlikely crusade was inspired by pioneering research over the past two decades that has revealed profound differences between the brain's two hemispheres. Work by the Nobel Prize–winning psychobiologist Roger Sperry and others suggests that the left hemisphere is better at verbal, logical, quantitative and analytical thinking, whereas the right hemisphere is more visually and spatially [illegible] artistic, musical, emotional and [illegible]

ILLUSTRATION BY CAROL ZALD

Western culture itself, with its heavy emphasis on "left brain" talents like logic and reason, is subtly biased against the right. That notion has prompted a number of educators to seek ways of redressing the balance. For example, Betty Edwards, a California art teacher, in her 1979 best-seller *Drawing on the Right Side of the Brain*, exhorts students to suppress the verbal left hemisphere and turn on the artistic right as a means of learning to draw.

Now that this right-brain movement, as it might be called, is spreading to the corporate world, its advocates are telling the heads of some of the nation's largest companies to stop relying so much on left-brain thinking, and instead to develop the mental "right stuff" that they claim will lead to greater creativity and entrepreneurial zeal. In addition, they say, executives can manage their subordinates better if they recognize which of them have predominantly left- or right-brain skills. "Often, the organization is at fault for not putting left- and right-brain people together very well," explains Weston Agor, director of the masters of public administration program at the University of Texas at El Paso, and author of *Intuitive Management: Integrating Left and Right Brain Management Skills* (1984). Agor and others say that brain dominance—the notion that some people tend to think more with their right hemispheres, others with the left—should be considered when a company hires, fires, promotes, forms committees, or assigns work.

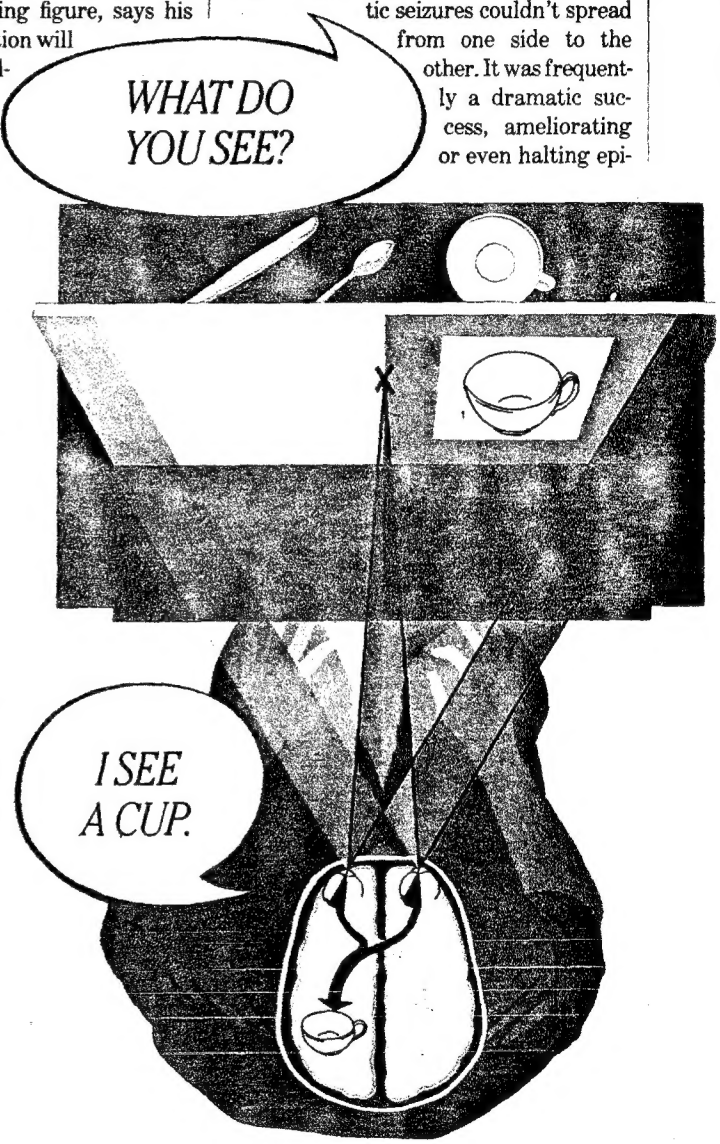
The right-brain movement is not without critics, of course—notably some of the most prominent scientists whose work it's based on. The movement's claims, they say, go well beyond what can be proved in the lab, and some of the methods advocated for increasing creativity are downright ludicrous. "It's pure nonsense," says Michael Gazzaniga, of Cornell University Medical College in New York, who assisted Sperry with much of the original split-brain research. "I take my hat off to some of these people for making money out of this deal. But the simple fact is that you don't have to invoke one cent's worth of experimental psychological data or neuroscience to make the observation that there are some people in this world who are terribly intuitive and creative, and some who aren't."

That hasn't stopped right-brain proponents from making inroads in American business—and doing a little business for themselves along the way. Agor, for example, earns $1,000 apiece for the dozen or so day-long seminars he gives each year. Inferential Focus, a New York consulting firm, charges its 75 corporate clients about $18,000 a year each for alerting them to new social and economic trends that it identifies by using "creative right-brain processes," as one company officer puts it. And Ned Herrmann, perhaps the movement's leading figure, says his Whole Brain Corporation will gross close to $2 million this year by conducting seminars and analyzing people in order to determine their "brain dominance profile."

Does the right-brain movement really have something to offer, or is it just pseudo science with neurological trappings? The implications of the answer go far beyond the corporate corridors: if the message is valid for business, it offers powerful insights into all manner of thinking. If not, it's probably just another fad.

To answer that question, it helps to go back to the scientific work that began at the California Institute of Technology in the early 1960s. Sperry and his students—Gazzaniga, Jerre Levy, and others—were studying patients who had undergone highly experimental brain surgery for epilepsy. Surgeons had cut the corpus callosum, an arching bundle of nerve fibers that connects the left and the right halves of the cerebrum, the largest and most sophisticated part of the brain. The surgery was intended to isolate the two cerebral hemispheres so that epileptic seizures couldn't spread from one side to the other. It was frequently a dramatic success, ameliorating or even halting epileptic attacks without visible side effects.

But Sperry soon learned that the lack of complications was an illusion. In effect, the surgery had left the patients with two brains inside a single skull. The duality didn't show up in normal behavior, since neither side was in conflict with the other. But when he and his colleagues devised ways of communicating with one hemisphere at a time, they found that the two half-brains differed profoundly.



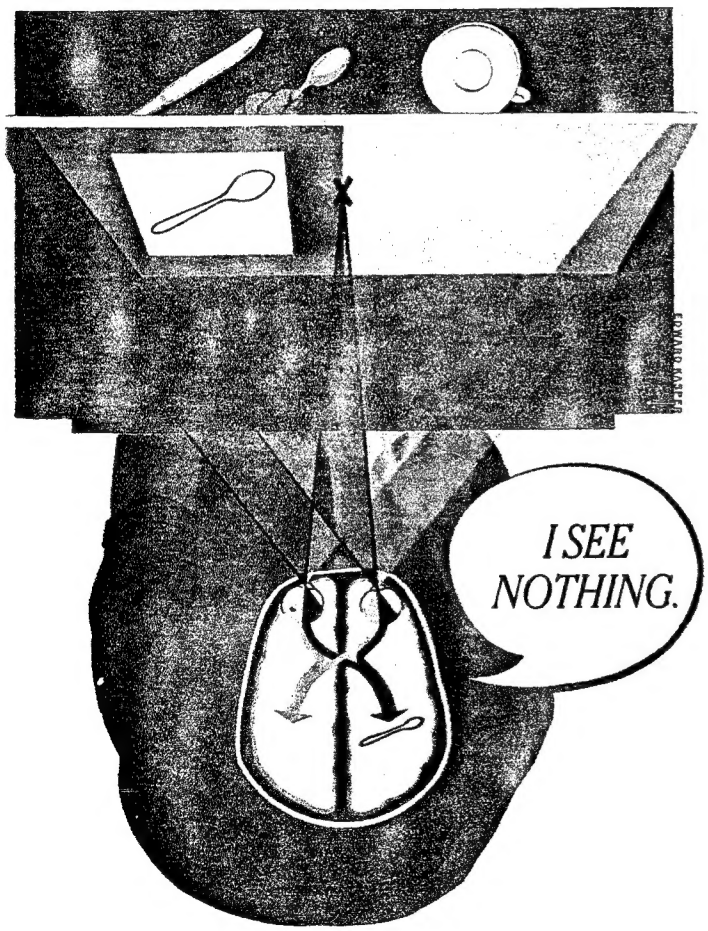
THE VERBAL LEFT

A "split brain" patient—whose main nerves connecting the two hemispheres have been cut—focuses on the center of a screen (X) while an image of a teacup is projected to his right. Visual information to the right of the X is projected to the left hemisphere, which also controls speech. Asked what he sees, the patient can reply correctly.

Their studies relied on a basic fact of neuroanatomy: nerve connections throughout the body cross at the midline, which means that sensation and movement on each side of the body are governed by the opposite side of the brain. In a typical study, Sperry and Gazzaniga flashed images to one side or the other of a patient's visual field so that the image would be seen by only one hemisphere of the brain (*see illustration, below*). When the verbal left hemisphere received the image, the patient could name what he saw. When the nonverbal right hemisphere received it, the patient couldn't name the object, but could select it from among other objects by using his left arm—the one controlled by the nonverbal side. "In many respects," Sperry wrote, "each disconnected hemisphere appears to have a separate 'mind of its own.' "

The scientists at first assumed that the vocal left hemisphere was dominant, the mute right one subordinate.* That assumption proved simplistic. Subsequent experiments showed that what the right hemisphere lacks in eloquence it more than makes up for in visual, spatial, and musical prowess. In one dramatic instance, Sperry and Gazzaniga asked one of their "split brain" patients to work a simple puzzle with his right hand. This hand, controlled by the supposedly dominant left hemisphere, made such a fumbling, ineffectual mess of it that the scientists had to restrain the left hand forcibly from moving onto the table to help out.

As the experiments progressed, Sperry found himself gaining a new appreciation for the talents of the nonverbal hemisphere, gradually becoming convinced that these abilities are undervalued by societies that emphasize verbal, logical, and quantitative achievement. As he came to maintain, western culture itself stacks the deck against the right hemisphere, just as it does against left-handers in everything from the design of scissors to the common meaning of the word sinister, which in Latin means left.



THE MUTE RIGHT

This time the image of a spoon is projected on the left side of the screen, where only the mute right hemisphere sees it. While the patient is unable to describe the object, he can easily pick it out by feel from a group of concealed objects—provided he uses his left hand.

"The main theme to emerge," Sperry wrote in 1973, "is that . . . our educational system, as well as science in general, tends to neglect the nonverbal form of intellect."

In Ned Herrmann, this message found receptive ears. "Even as a kid," he says, "I sensed this curious duality of loving math and science, but also music and art." Herrmann had been a double major in physics and music at Cornell. When he got interested in brain research in 1976, he was both chief of manager education at General Electric and president of the Stamford (Conn.) Art Association. "I'd been responding to the urges that I felt within me all my life," Herrmann says, "but now I saw that they came from opposite sides of the brain."

As Herrmann devoured brain research literature, he became convinced that the distinctions seen in the split-brain patients prevail in normal people too. Indeed, he decided, most people lean toward one or the other style of thinking. Either they're logical, verbal, and analytical—left-brain types who become lawyers, accountants, supervisors, or engineers, or else they're right-brainers who rely for guidance on leaps of intuition and gut feeling—the poets, dreamers, salesmen, and entrepreneurs of this world.

What corporations need, Herrmann decided, is a simple way to find out who is which. He devised a questionnaire to measure a person's "preferred mode of thinking," and began giving it to people at his workshops, at GE and elsewhere, on creativity and the right side of the brain. Some of the questions were drawn from the new brain research: one, for example, asked whether a person held a pen pointed towards or away from his body. (Levy had suggested that the control of language in people who hold their pens pointed toward them may reside in the hemisphere on the same side as their writing hand.) Other questions simply asked a person to choose between right-brain–left-brain dichotomies—for example, is he more creative or more logical, more emotional or more controlled?

Today, the Herrmann questionnaire has grown to a glossy 120-item survey—"Don't call it a test," he says, "because that has a connotation of right or wrong." It's published by the Whole Brain Corporation, the company he helped found two years ago after leaving GE. Whole Brain charges $50 to analyze each questionnaire ($40 each for ten or more). Or, for $1,250, Herrmann's staff will teach you to analyze the surveys yourself, provided you send

* Actually, the sides are reversed in some people. Careful studies show that the speech of 95 per cent of right-handers (who make up 90 per cent of the population) and 70 per cent of left-handers is controlled by the left hemisphere. Of the remainder, about half show right-hemisphere control of speech, and half have control shared by the two hemispheres.

him a copy of each result for research purposes. Herrmann says that more than 100,000 people have now taken it. (To assess your own brain style, at no additional cost, see the questionnaire on pages 40 and 41.)

Herrmann says his survey reveals that different patterns of brain dominance lead to distinctly different skills, and thus to different career choices. He adds that a person who winds up in a job for which his brain ill suits him can be miserable. (Herrmann thinks alcoholics tend to be right-brainers struggling in left-brain slots.) For unknown reasons, husbands and wives often fall at opposite ends of the continuum—"a fact that explains a lot of trouble at home."

KAY CHERNUSH

Entrepreneur Herrmann leads seminars on tapping into right-hemisphere creativity.

People who make the best executives are those who use the two sides of their brains equally, Herrmann says. "Think about the typical chief executive officer's day," he explains. "In the morning, he meets with the finance people and lawyers; at lunch, it's the Henry Moore sculpture people talking about the corporate park; in the afternoon, human resources and new product development. The CEO who's confined to one mode of thinking can't hack it."

To teach executives to broaden their brains, Whole Brain sends instructors to its corporate clients to conduct seminars and measure brain dominance. The seminars range from a half-day "brain update workshop," costing $2,000 plus travel expenses, to a two-and-a-half-day, $12,000 course in creative problem-solving for up to 20 people. Business is good enough for Whole Brain to maintain a staff of about 30 employees at its offices in Cambridge, Mass. and Lake Lure, N.C. Its clients have included some of the nation's largest firms—IBM, Control Data, GE, Shell, Goodyear, Polaroid, and General Foods.

In addition to increasing his own creativity, how can an executive put left- and right-brain insights to work? Herrmann offers an example: "Say a business needs to be more entrepreneurial, but its whole corporate culture is anti-entrepreneurial. The culture is the result of the individual mental preferences of its people, and a company composed of ten thousand engineers is going to be cerebral-left* in focus. If they really want innovation and creativity, they'll need to supplement their staff with more cerebral-right types."

Committees function more effectively with a mix of brain profiles, Herrmann maintains. "If you have a group that's homogeneous for brain dominance, they'll quickly reach a consensus and be satisfied with a relatively mediocre solution because they all think alike. You won't have anybody with a different point of view."

Not all right-brain advocates agree. Weston Agor contends that mixing brain types can lead to trouble. "The problem is that the left-brain people tend to throw cold water on the right-brain people's ideas, and after a while the right-brain people stop trying." He believes it's better to form three committees, one composed of right-brainers, one of left-brainers, and one of people with balanced brains. Then the right-brain group can draw up a list of wild and crazy proposals, the left-brain group can try to shoot them down, and the balanced group can appraise the results and carry out any ideas that survive.

In Agor's view, the most important contribution of the right hemisphere is its ability to infer overall patterns from a few scraps of evidence and jump to intuitive conclusions. "We live in a fast-changing, megatrend world," he says, "and creative intuition may be more important to survival than it was in the past."

Most of the right-brain theorists are in accord with this, but Agor takes the argument a highly dubious step further. He believes that, in some people, these powers go beyond mere intuition to encompass what he calls precognition—the ability to see the future by some power resembling ESP. Incredibly, as evidence of this, he says that in his survey of the brain styles of 2,000 top executives, many said they believed in, and claimed to use, ESP. But even Agor acknowledges that this method isn't likely to find much open support in the typical commercial enterprise. "Imagine if you walked into your boss's office tomorrow," he says, "and started talking about some premonitions you had. How far would you get?"

Inferential Focus, the New York consulting firm, takes a more conventional approach to divining the future. One of its founders, Bennett Goodspeed, a marketing expert who died of a heart attack two years ago, argued in his book *The Tao Jones Averages: A Guide to Whole-Brained Investing* (1983), that rational, calculating, left-hemisphere methods are good for predicting stock prices only as long as the future repeats the past—which, of course, it never does. Consequently, the advisers at Inferential Focus pay no attention to price-earnings ratios or computer projections. Instead, they simply read some 175 publications as diverse as FORTUNE, the *Oil & Gas Journal*, and *Soviet Life*. All the while, they keep their right hemispheres tuned to the lit-

* Besides distinguishing between those who favor the right or left hemisphere, Herrmann also divides people into cerebral and limbic (a reference to the limbic system, a set of structures in the brain). Cerebral people are said to be more intellectual, limbic ones more visceral and down to earth.

tle anomalies, the unexpected events, that may signal a shift in business trends.

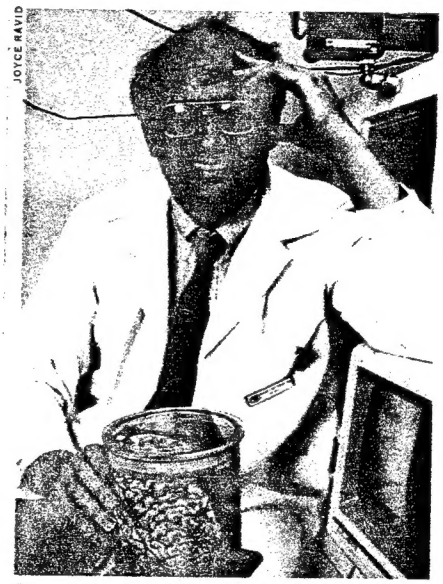
What kind of anomalies? "A couple of years ago, we began noticing that athletic stores were selling more extra-large jogging suits than there are extra-large joggers," says Charles Hess, one of the company's four consultants. "It seemed that running suits were taking on a new meaning as leisure wear." This bit of evidence meant little by itself, but soon, in Inferential Focus's eyes, it began to fit into a pattern. "Divorce rates were down for the first time in twenty years," says Carol Colman, another consultant. "And board game sales were up," Hess adds. The company's advisers eventually concluded from this and similar information that the "Me Decade" of the 1970s was ending. The 1980s, they said, would see the baby boom generation paying new attention to home and family—a conclusion they say has been borne out since they first reported it to clients in September 1983.

The Inferential Focus advisers also regard showing clients how to think in right-brain fashion to be part of their mission. "It's not so much teaching people to use their right brain," says Hess. "It's teaching them not to use their left brain, in order that the subtle, nonverbal right brain can have its say."

In this respect, most right-brain instructional methods are broadly similar to those used by Betty Edwards in *Drawing on the Right Side of the Brain*. In one exercise, students copy a drawing after turning the original upside down. The idea is to make it more difficult for the logical left brain to recognize the subject matter. That way, Edwards says, the right brain is free to draw what it really sees rather than what the left brain thinks it ought to see. Another book intended to teach right-hemisphere methods, Marilee Zdenek's *The Right-Brain Experience* (1983), advises people to free their minds of left-hemisphere inhibitions by studying mandalas (symmetrical designs based on Oriental symbols for the universe), writing with their non-dominant hand, and recording fantasies and dreams.

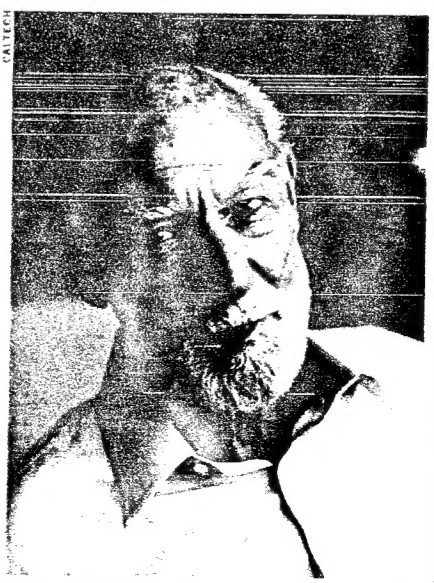
The interest that corporations have shown in this unconventional, sometimes even bizarre, sort of instruction may result partly from their desire to stay in front of fast-changing economic trends, to say nothing of the competition. Some, like Shell, have established programs to teach their managers to deal with all this. Ray Alvord, an employee development associate at Shell, says, "We felt there needed to be more emphasis on creative thinking, as opposed to the more standard approach of people brought up in a conservative, traditional company." Last year Shell hired Whole Brain to run 15 seminars for some three hundred managers. "The people who attended felt very positive about it," Alvord says. "But as far as a direct impact on our business goes, that's hard to assess. We haven't made any attempt to have people systematically evaluate their subordinates."

Herrmann's presentation was also a hit at Control Data's management training subsidiary in Minneapolis, and even at the monthly department-head meeting of the *Boston Globe*. "It was surprising," says Frank Grundstrom, the newspaper's director of human resources. "In a group of journalists, I expected a lot more cynicism than I saw. Even the biggest newsroom skeptics came away feeling this guy really had something."



JOYCE RAVID

Gazzaniga with pickled brain at Cornell lab



CALTECH

Sperry, the father of "split brain" research

Nonetheless, many research scientists remain unimpressed. "I've gotten so sick of people making piles of money on data that never came out of a lab," complains Jerre Levy, the Sperry collaborator, who's now at the University of Chicago. "They're taking findings with split-brain patients who don't have a corpus callosum and generalizing to normal people." Sally Springer, a psychologist at the State University of New York at Stony Brook and co-author of *Left Brain, Right Brain* (1985), says flatly that "the evidence we have now is that both hemispheres get involved in virtually everything we do. That doesn't mean these management experts aren't on to something. But to say that it works because of differential use of the two hemispheres goes well beyond what we can prove today."

Springer says that the differences between the hemispheres are largely a matter of degree. The right hemisphere, for example, is often capable of understanding speech, though it can't generate a verbal reply. Even simple relationships, like that between the way a person holds a pen and the location of his verbal hemisphere, are more complicated than was originally thought. Levy says it now appears that writing posture is related to the location of the hemisphere that governs reading, a visual skill, but not other language abilities like speaking or speech comprehension.

Springer's co-author, Georg Deutsch of the University of Texas Medical Branch in Galveston, says that the idea of cerebral dominance had been all but abandoned by scientists before the right-brain movement revived it. "What's come back now is not so much that one or the other side is dominant, but that some people use one side more than the other," he says. "It's the second point that we seriously question. It may be a small part of the constellation of differences these people are talking about. But I suspect that differences within a hemisphere account for more than differences between them."

Deutsch adds that the suggested methods for boosting right-brain thinking are sometimes downright laughable. He cites an article in a management training magazine that suggested playing loud music to drown out parts of a verbal presentation, and lighting incense before a brainstorming session "so you can each read an idea in the smoke." ➳

Even proponents of the right-brain movement acknowledge that providing a scientific foundation for some of their assertions won't be easy. Lawrence Schkade, director of the Center for Research on Information Systems at the University of Texas at Arlington, has been tackling the issue by studying brain waves during mental activity. He found that, when solving problems, accounting majors identified as left-brain types by Herrmann's questionnaire did in fact show greater activity in the left hemisphere, as measured by an electroencephalograph, while art majors had more activity in the right. But when Schkade used the Herrmann survey and others like it to try to predict how a particular person would perform on the EEG, he was never more than 60 per cent accurate.

Sperry himself, an intensely private man who has suffered in recent years from a progressive neurological disease, takes a more cautious stand than some of his disciples. He thinks that the normal differences between the left and right hemispheres "may be exaggerated in some individuals," which suggests that there may in fact be people who could be characterized as left- or right-brain types. But he adds that "many of the practical implications of this cannot as yet be either proved or disproved."

The best way to answer the question of whether nominally right-brain behavior really flows from the right hemisphere would be to peer inside the living brain while it's at work. Perhaps the best instrument yet devised for doing this is the PET, for positron emission tomography, scanner. This device makes cross-sectional pictures of the brain that indicate the level of mental activity in its parts. The subject is given an injection of a chemical relative of glucose that has been tagged with a fairly harmless short-lived radioisotope. Since brain cells burn glucose for fuel, the most active brain parts take up the most radioactivity, hence appear brightest on the scan.

At the UCLA School of Medicine, neurologist John Mazziotta and his colleagues have used PET scans to establish that the left-right distinctions do in fact hold up for simple activities. Volunteers who listened to a narrator read a Sherlock Holmes story had more activity in the verbal left hemisphere, as expected, while those who listened to musical chords had more activity on the right.

But when Mazziotta switched to a more complicated task, the results became less clear. He asked volunteers to listen to two series of musical notes and decide whether they were identical. "This is a nonverbal task," Mazziotta says, "and, by a naïve approach, one might expect it to be handled in the right hemisphere." But only five of the eight volunteers showed more right hemisphere brain activity. The other three had more activity on the left.

Right-brain advocates could argue that the results support their assertion that people with different brain styles attack the same problem with different hemispheres. Mazziotta sees it otherwise. "Even on the most trivial tasks," he says, "our studies showed that everything in the brain was in flux—both sides, the front and back, the top and bottom. It was tremendously complicated. To think that you could reduce this to a simple left-right dichotomy would be misleading and oversimplified."

The quarrel with the right-brain movement, Mazziotta and others say, isn't with the results its practitioners obtain. The actual business advice of companies like Inferential Focus and Herrmann's Whole Brain Corporation may be quite sound, and in any case the left-right distinction is an intriguing way of classifying thought processes. The problem arises when the right-brain movement implies that its conclusions are based on hard fact, rather than an essentially metaphorical interpretation of scientific discoveries. The differences between the hemispheres are still not well understood, and Gazzaniga, like Springer, says that the newest research tends to emphasize the way the two cooperate with one another during normal functioning, rather than how they differ.

Scientists are understandably annoyed when they see careful but often inconclusive work popularized and exploited so glibly. As Deutsch puts it: "I get bothered by people saying 'This is all based on neurological theory, therefore it's true.' It's not legitimized by neurological theory. There is no evidence that people favor one portion of the brain or the other—that's pure speculation. And you can't justify the program in those terms." Let the right-brain movement prove itself by showing that right-thinking managers make better decisions in the board room, these scientists say, rather than by appealing to what goes on in the lab. In the meantime, the prudent position may be the one that Gazzaniga only half-jokingly recommends: "The left hemisphere—don't leave home without it." □

WHICH SIDE ARE YOU ON?

Are you a left-brain or a right-brain thinker? Strictly speaking, of course, you're both, since normal people use both sides of their brains for virtually everything they do. Nevertheless, many people think in a way that scientists associate with one or the other of the brain's hemispheres. To determine your own thinking style, try this just-for-fun questionnaire, prepared under the guidance of Ivan Muse, a professor of education at Brigham Young University. (Note: you'll need a partner to help you with Section Three.)

SECTION ONE

1. *When you go to a movie, do you prefer to sit*
a. on the left side of the theater
b. on the right side of the theater
c. in the center, or no preference

2. *Do you like to work*
a. on a team
b. by yourself

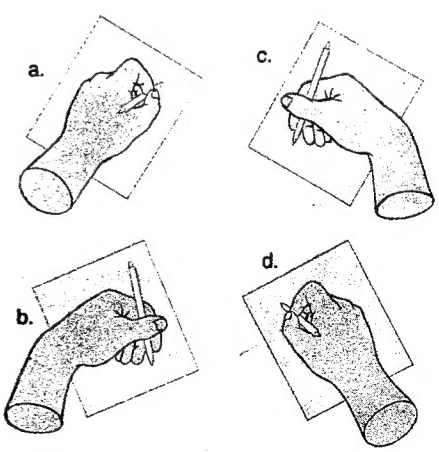
3. *When someone gives you an assignment, do you prefer*
a. highly specific instructions
b. rather flexible instructions

4. *Do you tend to make decisions*
a. on a gut feeling or hunch
b. after careful analysis and thought

5. *In general, do you feel that laws*
a. should be strictly enforced for everyone
b. should be enforced only after considering individual circumstances

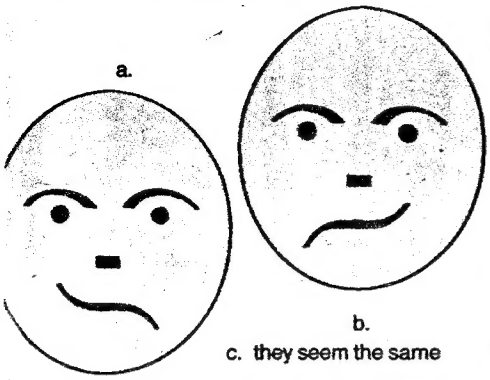
6. *To motivate yourself, do you prefer*
a. competing with yourself
b. competing with others

7. *Which drawing is closest to the way you hold a pen?*



MICHAEL ROWE

8. *Which face seems happier to you?*



c. they seem the same

9. *Would you prefer to be married to someone who*
a. has unusual ideas and daring concepts
b. is a thorough planner and organizer

10. *When you shop, do you tend to buy*
a. after reading labels and comparing costs
b. on impulse

11. *Does daydreaming help you make decisions*
a. frequently
b. sometimes
c. rarely

12. *Which makes you happiest:*
a. doing a crossword puzzle
b. sketching or drawing
c. finishing a work assignment
d. singing in the shower

13. *When you meet someone, is it easier to*
a. remember the name
b. remember the face
c. both are equally easy or difficult

14. *Pick the two adjectives that best describe how you work.*
a. organized (efficient, orderly)
b. imaginative (good at thinking up new ideas)
c. outgoing (work well with others)
d. result-oriented (complete everything you start)
e. intellectual (use reasoning powers to solve tasks)
f. intuitive (reach conclusions by a "sixth sense")

15. *At a meeting, do you prefer*
a. a graphic slide presentation
b. a dynamic speaker

16. *When driving in a city that you know slightly, do you*
a. get a map and ask for explicit directions
b. navigate by your own sense of direction

17. *In a discussion, do you usually feel that*
a. there are clear right and wrong positions
b. both sides have merit

18. *After attending a play or movie, do you prefer*
a. to talk to others about it
b. to think it over privately

19. *When do you do your best work?*
a. early in the morning
b. late in the afternoon or evening
c. at no particular time of day

20. *If chosen to be a leader, would you rather be known as*
a. humane, understanding, empathetic
b. logical, organized, fair

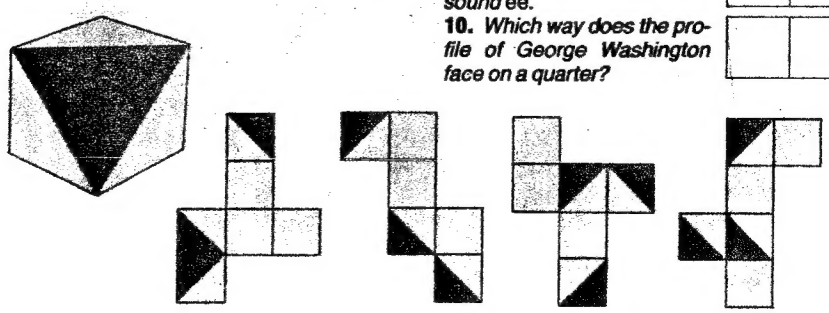
SECTION TWO

Here are four problems. Rank them in order of preference, with number one being the type of problem you most like to solve, and number four being your least favorite. (You needn't answer the questions, although the answers will be given for those who want them.)

Problem A
A grain company mixes seed costing 20 cents a pound with seed costing 25 cents a pound to produce a blend of seed costing 22 cents a pound. How many pounds of the more expensive seed are in a 50-pound sack of this mixture?
a. 20
b. 25
c. 30
d. 40
e. none of these

Problem B
You're confined to a prison cell that has two doors. One leads to freedom, the opposite one to instant death. You don't know which door is which. With you are two jailers. One of them always tells the truth; the other always lies. Again, you don't know who is who. You may ask either of the jailers—but not both—one question. What question should you ask to learn which door leads to freedom?

Problem C
Which of the following four cutouts could be folded in such a way that it produces the cube in the drawing?



Problem D
The words house, village, *and* thumb *are all related to the word* green *in that they combine with* green *in a common word or phrase:* greenhouse, village green, green thumb. *In each example below, find the word that relates to all three:*
a. blue, cake, cottage
b. water, pen, soda
c. up, book, charge
d. man, screen, sure

SECTION THREE

For this section, you need a partner. Give the magazine to your partner now, and don't read the rest of these instructions.

Instructions for partner: Sit in front of the person being examined and ask the ten questions below. Pay no attention to the answers, but watch the person's eyes to see in which direction he *first* glances when mulling over the problem. Put a check in the appropriate box below. *(He need not glance exactly to the side; if he glances up and to his left, that's considered a leftward glance.)* If he doesn't look to either side, don't check either box.

1. *How many letters are there in the word* California?		
2. *A cube has how many points (i.e., pointed corners)?*		
3. *What was the name of your favorite grade school teacher?*		
4. *Multiply seven times fourteen in your head.*		
5. *Name the letters of the alphabet that have curves in their capital-letter forms.*		
6. *Give three meanings for the word* pound.		
7. *What color shirt (blouse) did you wear yesterday?*		
8. *How many doorways do you pass through going from the street to your bedroom?*		
9. *Name the letters of the alphabet that contain the sound* ee.		
10. *Which way does the profile of George Washington face on a quarter?*		

A key for interpreting the results of the questionnaire appears on page 60.

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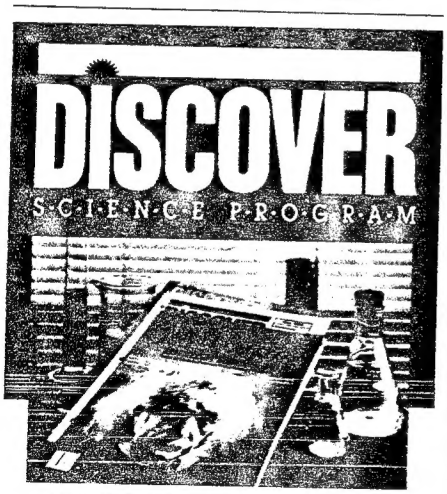

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INTERPRETING THE LEFT-BRAIN, RIGHT-BRAIN QUESTIONNAIRE (pages 40 and 41)

SECTION ONE

Answers that tend to indicate a left-brain preference get five points each. Right-brain answers get one point. Answers that indicate no preference get three points each.

1. a=5 b=1 c=3

The theory here is that left-brain people may tend to sit on the left side of theaters so the screen will fall more into their right visual field, which sends information direct to the left hemisphere of the brain. For right-brainers, the situation is reversed.

2. a=1 b=5
3. a=5 b=1
4. a=1 b=5

The answer to question number 4 depends on the fact that right-brain people may be more likely to jump to emotional or intuitive conclusions, while left-brain people are usually more analytical.

5. a=5 b=1
6. a=1 b=5
7. a=1 b=5 c=5 d=1
8. a=5 b=1 c=3

Since the right hemisphere of the brain is usually more emotionally sensitive, most people see figure A as happier. Presumably this is because the smiling side of its mouth falls in the left visual field, which goes direct to the right hemisphere.

9. a=1 b=5
10. a=5 b=1
11. a=1 b=3 c=5
12. a=5 b=1 c=5 d=1
13. a=5 b=1 c=3

Left-brain people tend to be better at remembering names than faces. For right-brainers, the reverse is true.

14. a=5 b=1 c=1 d=5 e=5 f=1
15. a=1 b=5
16. a=5 b=1

Left-brainers usually want explicit directions, while right-brainers regard asking for directions as an admission of failure.

17. a=5 b=1
18. a=5 b=1
19. a=5 b=1 c=3

Left-brainers tend to be morning people, right-brainers evening people.

20. a=1 b=5

SECTION TWO

Problems A and B are left-brain problems, because they involve mathematics and logic, respectively. The other two are right-brain, because they depend on visualizing a folded figure (problem C) or thinking of imaginative connections between words (problem D). Score this section according to which two problems you preferred to do. Find your score in the table below:

		Problem ranked number two			
		A	B	C	D
Problem ranked number one	A	-	15	11	11
	B	15	-	11	11
	C	7	7	-	3
	D	7	7	3	-

ANSWERS TO SECTION TWO

Problem A: a. 20 pounds.

Problem B: Ask either jailer, "If I asked the other jailer to point to the door to freedom, which door would he point to?" Then go through the door opposite the one the jailer indicates. If you put the question to the truthful jailer, he'll honestly tell you what the other jailer would've said—that is, a lie. If you ask the lying jailer, he'll lie and tell you the opposite of what the truthful jailer would've said.

Problem C: b.

Problem D: a. cheese; b. fountain; c. cover; d. fire

SECTION THREE

Some studies have suggested that people glance in the direction opposite to the hemisphere that is most active at the time. That is, a person who looks to his left may be using his right hemisphere, and vice versa. So give yourself five points for every 👁 👁 glance, one point for every 👁 👁 glance, and three points for each pair of boxes that your tester left unchecked.

Add your scores for sections one, two, and three together. If the total is between 34 and 85 points, you've shown a preference for right-brain thinking. You may have creative, musical, or artistic talents. You often rely on feelings and intuition in making decisions. You're good at spotting overall patterns based on limited evidence, and excel at solving complex problems that demand a creative and insightful approach. You detest dealing with messy details.

If you scored between 119 and 170 points, you've demonstrated a preference for left-brain thinking. You're likely to be a verbal, logical, analytical person, perhaps with mathematical skills. You're meticulous and well organized, and excel at activities that require careful planning, cost projections, and attention to detail. You'd rather see one project carried through to completion than six half finished.

If you scored between 86 and 118 points, you've indicated that you use both right-brain and left-brain thinking equally.